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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/598,503

09/01/2006

Katsuya Oda

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EXAMINER

SEDIGHIAN, REZA

ART UNIT

PAPER NUMBER

2613

NOTIFICATION DATE

DELIVERY MODE

03/19/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.		Applicant(s)	
	10/598,503		ODA ET AL.	
	Examiner		Art Unit	
	M. R. Sedighian		2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/1/06</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. This communication is responsive to applicant's 9/1/06 preliminary amendments. The amendments have been entered. Claims 1-11 are now pending.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Iida et al. (US Patent No: 6,643,470 B1).

Regarding claim 1, Iida teaches an optical transmission apparatus (Transmitter Unit, fig. 6), comprising: a frequency converter (Frequency Converter, fig. 6) that converts a frequency band of an electric signal to be transmitted into a specific frequency band higher than the frequency band (col. 8, lines 59-67, col. 9, lines 1-3); and an electro-optic converter (Semiconductor Laser, fig. 1) that performs electro-optic conversion on the frequency converted electric signal (col. 9, lines 49-60).

Regarding claim 9, Iida teaches the electro-optic converter is a laser (Semiconductor Laser, fig. 6).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 2, 4, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (US Patent No: 6,643,470 B1) in view of Briskman (US Patent No: 6,023,616) and in further view of Barbosa (US Patent No: 2005/0105906 A1).

Regarding claims 2, 4, and 10, Iida differs from the claimed invention in that Iida does not specifically teach the frequency converter converts the frequency band into a frequency band not lower than 500 MHz. However, it is well known to convert a frequency band to a frequency band not lower than 500 MHz. For example, Briskman teaches a radio frequency band can be up/down converted to any desired band in the range of about 40-4000 MHz (col. 6, lines 17-19). As it is taught by Briskman, it would have been obvious that the frequency converter of Iida can convert the frequency band into a frequency band not lower than 500 MHz to provide further desired level of signal transmission. The modified electro-optical transmission system of Iida and Briskman further differs from the claimed invention in that Iida and Briskman do not specifically disclose the electro-optic converter is a single mode oscillation laser. The use of single mode oscillation laser for generation and transmission of optical signals is well known. Barbosa teaches the use of a single mode oscillation laser (11, fig. 3b) for generation and transmission of optical signals (page 3, paragraph 0033, lines 1-11). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a single mode oscillation laser, such as the one disclosed by Barbosa, for the laser light source of Iida to generate signal lights of unique wavelengths.

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6. Claims 3, 5, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (US Patent No: 6,643,470 B1) in view of Miyajima (US Patent No: 5,850,414) and in further view of Yao et al. (US Patent No: 6,580,532 B1).

Regarding claims 3, 5, and 11, Iida differs from the claimed invention in that Iida does not specifically teach the frequency converter converts the frequency band into a frequency band not lower than 200 MHz. Miyajima teaches a frequency band can be converted to a frequency band not lower than 200 MHz (col. 4, lines 20-23). As it is taught by Miyajima, it would have been obvious that the frequency converter of Iida can convert the frequency band into a frequency band not lower than 200 MHz such that a further desired level of signal transmission can be provided. The modified electro-optical transmission system of Iida and Miyajima further differs from the claimed invention in that Iida and Miyajima do not specifically disclose the electro-optic converter is a multi-mode oscillation laser. Yao teaches the use of a multi-mode oscillation laser for generation and transmission of optical signals (col. 11, lines 25-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a multi-mode oscillation laser, as it is taught by Yao, for the laser light source of Iida to generate multiple wavelengths of light with significant power.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (US Patent No: 6,643,470 B1) in view of Bickham (US Patent Application Publication No: 2005/0025501 A1).

Regarding claim 6, Iida teaches the optical transmission system (fig. 6) further comprising an optical transmission apparatus (1, 2, fig. 6) that performs electro-optic conversion

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on an electric signal to be transmitted (col. 8, lines 47-63) and feeds out the electric signal to an optical transmission line (27, fig. 6), the optical transmission line that transmits a signal light transmitted from the optical transmission apparatus (1, fig. 6), and an optical reception apparatus (22, fig. 6) that receives the signal light transmitted from the optical transmission apparatus through the optical transmission line and performs opto-electric conversion (23, fig. 6) on the signal light so as to receive the original electric signal (col. 7, lines 30-53). Iida differs from the claimed invention in that Iida does not specifically disclose the use of an optical transmission line with total return loss of not lower than 60 dB. Bickham teaches an optical transmission system (100, fig. 1) that uses an optical transmission line (26, fig. 1) with total return loss of approximately 60 dB (page 1, paragraph 0009, lines 1-4). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an optical fiber transmission line that has a total return loss of approximately 60 dB, as it is taught by Bickham, for the optical transmission line of Iida to provide an optical fiber with low fiber-loss.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (US Patent No: 6,643,470 B1) in view of Briskman (US Patent No: 6,023,616) and in view of Barbosa (US Patent No: 2005/0105906 A1) and in further view of Bickham (US Patent Application Publication No: 2005/0025501 A1).

Regarding claim 7, Iida teaches the optical transmission system (fig. 6) further comprising an optical transmission apparatus (1, 2, fig. 6) that performs electro-optic conversion on an electric signal to be transmitted (col. 8, lines 47-63) and feeds out the electric signal to an optical transmission line (27, fig. 6), the optical transmission line that transmits a signal light

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transmitted from the optical transmission apparatus (1, fig. 6), and an optical reception apparatus (22, fig. 6) that receives the signal light transmitted from the optical transmission apparatus through the optical transmission line and performs opto-electric conversion (23, fig. 6) on the signal light so as to receive the original electric signal (col. 7, lines 30-53). The electro-optical transmission system of Iida modified by Briskman and Barbosa differs from the claimed invention in that Iida, Briskman, and Barbosa do not disclose the use of an optical transmission line with total return loss of not lower than 60 dB. Bickham teaches an optical transmission system (100, fig. 1) that uses an optical transmission line (26, fig. 1) with total return loss of approximately 60 dB (page 1, paragraph 0009, lines 1-4). It would have been obvious to a person of ordinary skill in the art to incorporate an optical fiber transmission line that has a total return loss of approximately 60 dB, as it is taught by Bickham, for the optical transmission line in the transmission system of Iida modified by Briskman and Barbosa to provide an optical fiber with low fiber-loss.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (US Patent No: 6,643,470 B1) in view of Miyajima (US Patent No: 5,850,414) and in view of Yao et al. (US Patent No: 6,580,532 B1) and in further view of Bickham (US Patent Application Publication No: 2005/0025501 A1).

Regarding claim 8, Iida teaches the optical transmission system (fig. 6) further comprising an optical transmission apparatus (1, 2, fig. 6) that performs electro-optic conversion on an electric signal to be transmitted (col. 8, lines 47-63) and feeds out the electric signal to an optical transmission line (27, fig. 6), the optical transmission line that transmits a signal light

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transmitted from the optical transmission apparatus (1, fig. 6), and an optical reception apparatus (22, fig. 6) that receives the signal light transmitted from the optical transmission apparatus through the optical transmission line and performs opto-electric conversion (23, fig. 6) on the signal light so as to receive the original electric signal (col. 7, lines 30-53). The electro-optical transmission system of Iida modified by Miyajima and Yao differs from the claimed invention in that Iida, Miyajima, and Yao do not disclose the use of an optical transmission line with total return loss of not lower than 60 dB. Bickham teaches an optical transmission system (100, fig. 1) that uses an optical transmission line (26, fig. 1) with total return loss of approximately 60 dB (page 1, paragraph 0009, lines 1-4). It would have been obvious to a person of ordinary skill in the art to incorporate an optical fiber transmission line that has a total return loss of approximately 60 dB, as it is taught by Bickham, for the optical transmission line in the transmission system of Iida modified by Miyajima and Yao to provide an optical fiber with low fiber-loss.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (571) 272-3034. The examiner can normally be reached on 9 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. R. Sedighian/
Primary Examiner, Art Unit 2613